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The Influence of Occupational Health and Safety (OHS) and Work Environment on Employee Performance through Job Satisfaction (Case Study at the Cilincing Motor Vehicle Testing Management Unit)

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Abstract: This study aims to analyze the effect of occupational safety and health (OSH) training on improving the knowledge and performance of vehicle inspection officers at the Motor Vehicle Testing Management Unit (UP PKB) Cilincing, under the Transportation Agency of DKI Jakarta Province. The training provided consists of internal education for new employees as an introductory orientation to enhance their understanding of workplace safety. This research adopts a quantitative approach, with data collected through questionnaires distributed to the entire population of 42 inspection officers. The sampling technique used is non-probability sampling with a saturated sampling method, as all population members were included as the sample. The results show that OSH training has a positive and significant impact on the officers' work-related knowledge. Furthermore, the increased knowledge gained from the training also contributes to better performance in carrying out vehicle inspections. These findings underscore the importance of OSH training as a managerial strategy to enhance workplace safety and operational efficiency. It is recommended that OSH training be conducted regularly and systematically, not only for new employees but also as a refresher for all officers. Management is also encouraged to develop more interactive and practical training modules to ensure that the acquired knowledge is effectively applied in the field.

Keyword: Occupational Safety and Health Training, Work Knowledge, Performance, UP PKB Cilincing, Occupational Safety and Health.

INTRODUCTION

Every company, organization, or government agency must have high-quality human resources (HR) to achieve its goals. Human resources refer to creative individuals who serve as the driving force behind an organization, whether in the public sector or other industries.

They play a critical role and are considered valuable assets, making it essential to continuously develop their skills and capabilities (Nathaniel, 2022). Therefore, every organization must be able to manage its human resources effectively by balancing employee needs with organizational goals. Achieving this balance is the key to enabling an organization to grow with innovation and operational efficiency (Lathifaturahmah et al., 2023). According to Siagian, as cited by (Lianto Rihardi, 2021), the growth of a company is strongly influenced by the quality of its human resources.

In accordance with the Decree of the Head of the DKI Jakarta Transportation Agency No. e-0062 of 2023 concerning the Implementation of Mandatory Motor Vehicle Testing Services by the Motor Vehicle Testing Management Unit of the DKI Jakarta Transportation Department, most of the vehicles tested at the Cilincing Motor Vehicle Testing Management Unit are head tractors and fuel tank trucks that use diesel fuel. As a result, the surrounding air is heavily polluted with exhaust gases, exposing field officers to high levels of air pollution and causing respiratory issues. The rising number of health complaints among staff members at this facility highlights a serious concern, especially in relation to Occupational Health and Safety (OHS). Poor working conditions, including prolonged exposure to vehicle emissions, high work-related stress, and insufficient protective measures, can negatively affect both the physical and mental health of workers. Although the staff wear masks as a preventive measure, the tiny airborne particles and dust remain difficult to avoid, ultimately affecting their job satisfaction and performance.

Moreover, the health and safety issues do not only impact the employees but also affect members of the public who come to the facility for vehicle testing (Uji KIR). Many visitors experience discomfort due to the polluted air and dust in the area. Common health complaints such as respiratory problems, fatigue, and stress not only reduce the overall well-being of the workers but also impair their job performance. Dissatisfaction with the working environment and poor health can reduce motivation, ultimately leading to lower productivity and diminished quality of public service.

Environmental quality assessments conducted in various rooms within the facility show that overall conditions fail to meet the air quality standards outlined in the DKI Jakarta Governor's Regulation No. 54 of 2008. Several aspects of the work environment require urgent attention. For instance, lighting intensity in most rooms meets the standard, but in Testing Lanes 1, 2, and 3, it falls below the minimum threshold, measuring only 80 lux. Therefore, improved lighting and optimized interior design are needed to enhance visibility and comfort.

Room temperatures in most areas comply with the standard; however, Testing Lanes 1, 2, and 3 exceed the recommended limit with readings reaching 30˚C. This requires better ventilation systems and attention to worker comfort, such as ensuring adequate hydration and proper work attire. Humidity levels are generally within acceptable limits, but excessive humidity was detected in the same lanes (65%), which may cause discomfort. Installing dehumidifiers or enhancing air conditioning systems is recommended.

Furthermore, the ventilation rates in several areas such as Testing Lanes 1, 2, and 3, the Facilities Room, and the Administrative Office do not meet the required standards. Poor airflow can limit the supply of clean air and lead to the accumulation of pollutants. Ventilation rates were recorded at just 0.10 m/s, indicating the need for improvements through better air circulation systems, the installation of exhaust fans, and regular maintenance of air conditioning filters.

Based on data from 2017, the average concentration of personal particulate matter exposure among mechanical inspectors and administrative staff at the Cilincing Motor Vehicle Testing Unit also indicates concerning conditions. Given the issues highlighted above, this research aims to investigate the problem further through a study titled: "The Influence of Occupational Health and Safety (OHS) and Work Environment on Employee Performance

through Job Satisfaction (Case Study at the Cilincing Motor Vehicle Testing Management Unit)."

METHOD

This research uses a quantitative approach that relies on statistical data to objectively and measurably answer the research questions. This approach was chosen because it allows the researcher to empirically test the relationships between variables through numerical measurement, and to produce conclusions that are generalizable regardless of time, place, or specific situations. According to Lubis (2021), population is the entire group of research subjects that possess certain characteristics defined by the researcher. The population in this study includes all motor vehicle testing officers at the Cilincing Motor Vehicle Testing Management Unit (UPPKB), under the Transportation Agency of DKI Jakarta Province, totaling 42 people.

For the sampling technique, this study uses Non-Probability Sampling with a Saturation Sampling approach, where all members of the population are included as the sample. This technique was chosen due to the relatively small population size, which allows for full distribution of the questionnaire so that all population elements are optimally represented. The data used in this research consist of two types: primary data and secondary data. Primary data were obtained by distributing closed-ended questionnaires to respondents, while secondary data were gathered from literature, scientific journals, official documents, and other relevant sources that support the analysis needs.

This study employs Structural Equation Modeling (SEM) using the Partial Least Squares (PLS) method with the assistance of SmartPLS software. SEM-PLS was selected because it is capable of analyzing causal relationships between latent variables simultaneously, even with a relatively small sample size.

The analysis is carried out through two main stages: the measurement model (outer model) to test the validity and reliability of the instruments, and the structural model (inner model) to examine the relationships between constructs. Model evaluation involves testing R-square values, Goodness of Fit (GoF), and hypothesis testing based on P-values and T-statistics, with a significance level of 5%.

RESULT AND DISCUSSION

The measurement model testing in this study was conducted to ensure that the variable Occupational Health and Safety (X1), Work Environment (X2), Job Satisfaction (Z), Employee Performance (Y) are measured with both validity and reliability. Validity was assessed through convergent validity, indicated by an Average Variance Extracted (AVE) value of ≥ 0.5, and discriminant validity, evaluated by comparing the square root of AVE with the inter-construct correlations to ensure that each construct is conceptually distinct. Reliability was measured using composite reliability, with a threshold of CR ≥ 0.7, to confirm the internal consistency of the indicators within each construct. This measurement model assessment is a critical prerequisite prior to analyzing the direct and indirect relationships among the variables as specified in the proposed research model.

Validity Test Result

Convergent validity testing was conducted using SmartPLS 4 with the Partial Least Squares (PLS) algorithm approach. An indicator is considered valid if it has a loading factor value of ≥ 0.70, indicating that the indicator strongly represents the measured construct.

Table 1. Results of Validity Testing

Variable	Indicators	Loading Factors	Description

Occupational Health and Safety (X1)	X1.1	0.955	Valid
	X1.2	0.962	
	X1.3	0.959	
	X1.4	0.965	
Work Environment (X2)	X2.1	0.921	Valid
	X2.2	0.932	
	X2.3	0.938	
	X2.4	0.901	
	X2.5	0.928	
	X2.6	0.888	
	X2.7	0.964	
	X2.8	0.953	
Job Satisfaction (Z)	Z1	0.942	Valid
	Z2	0.943	
	Z3	0.909	
	Z4	0.945	
	Z5	0.959	
Employee Performance (Y)	Y1	0.915	Valid
	Y2	0.962	
	Y3	0.942	
	Y4	0.966	
	Y5	0.954	

Source: Research data

Based on the validity test results presented in Table 1, the loading factor values for each indicator of the studied variables demonstrate a strong relationship with their respective latent constructs, thereby supporting convergent validity. The detailed interpretation is as follows:

The Occupational Health and Safety (X1) variable comprises four indicators, each of which exhibits very high loading factor values ranging from 0.955 to 0.965. These values are well above the minimum threshold of 0.70, indicating that all indicators have a strong and consistent relationship with the latent construct they represent. As all values exceed the required limit, it can be concluded that the indicators used to measure Occupational Health and Safety are valid and meet the criteria for convergent validity.

The Work Environment (X2) variable is measured using eight indicators, with loading factors ranging from 0.888 to 0.964. These consistently high values confirm that each indicator significantly contributes to the construct. Despite the slightly lower value of 0.888, it remains above the acceptable threshold, ensuring the validity of the indicator. Overall, the indicators for Work Environment exhibit high internal consistency and are valid measures of the construct.

The Job Satisfaction (Z) construct is assessed using five indicators, all of which report high loading factor values between 0.909 and 0.959. These values reflect a strong correlation between each indicator and the latent variable, suggesting that Job Satisfaction is being measured accurately and reliably. Thus, the construct achieves convergent validity.

The Employee Performance (Y) variable consists of five indicators, with loading factor values ranging from 0.915 to 0.966. These values indicate a very strong relationship between the indicators and the construct, confirming that the measurement of Employee Performance is both reliable and valid.

In conclusion, all variables in this study show strong evidence of convergent validity, with each indicator exhibiting a loading factor well above the threshold of 0.70. This confirms that each indicator is a reliable and valid measure of its corresponding latent construct, and the measurement model is appropriate for further analysis.

Reliability Test Result

Reliability testing evaluates the internal consistency of the research instrument to ensure stability and trustworthiness in repeated measurements. This study employs Cronbach's Alpha and Composite Reliability as the main indicators. A construct is considered reliable if Cronbach's Alpha > 0.6 (exploratory) or > 0.7 (confirmatory), and Composite Reliability > 0.7 (Ghozali, 2016). The results of both indicators are presented as follows.

Table 2. Results of Reability Testing

	Cronbach's alpha	Composite reliability (rho_c)
Occupational Health and Safety (X1)	0.972	0.979
Work Environment (X2)	0.977	0.980
Job Satisfaction (Z)	0.967	0.974
Employee Performance (Y)	0.972	0.978

Source: Research data

Based on the reliability test results in Table 2, all constructs in this study, Occupational Health and Safety (X1), Work Environment (X2), Job Satisfaction (Z), Employee Performance (Y) have Cronbach's Alpha and Composite Reliability values above 0.7. This indicates that all indicators within each construct exhibit high internal consistency and meet the reliability criteria. Therefore, the instruments used in this study are considered reliable and suitable for further analysis.

R^2 Test Result

The coefficient of determination (R^2) represents the proportion of variance in the dependent variable that can be explained by the independent variables within the model. According to Hair et al. (2014), R^2 is derived by squaring the correlation coefficient. To assess the explanatory power of the model, the R^2 value can be interpreted as follows: a value above 0.67 indicates a strong level of explanatory power, a value between 0.33 and 0.67 reflects a moderate level, while a value between 0.19 and 0.33 suggests a weak level of influence. The following model summary table presents the R^2 values for each dependent construct in the study.

Table 3. Results of Coefficient of Determination (R^2)

Variable	R-square	R-square adjusted	Result
Employee Performance (Y)	0.482	0.446	Moderate
Job Satisfaction (Z)	0.742	0.731	Strong

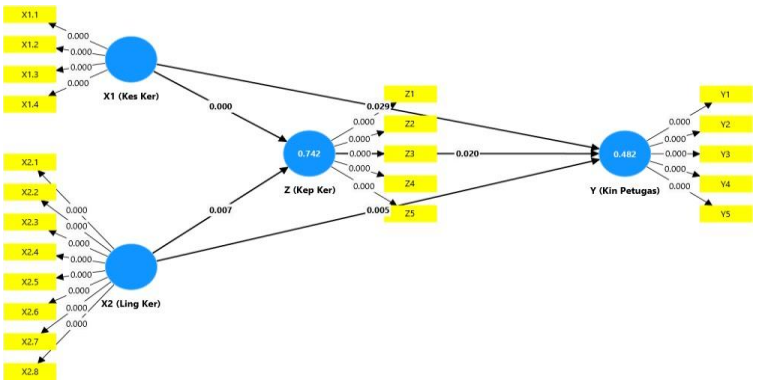
Source: Research data

Based on Table 3 above, the model for Employee Performance shows an R-Square value of 0.482 or 48.2%, which falls into the moderate category. Meanwhile, the Adjusted R-Square value for the Job Satisfaction variable is 0.742 or 74.2%, which is categorized as strong. Therefore, it can be concluded that the model is quite good, indicating a reasonably accurate level of prediction.

Hypothesis Testing Result

This section outlines the final stage of analysis, which involves evaluating the regression coefficients to examine the significance of relationships between variables. Hypothesis testing is conducted at a 5% significance level, where a hypothesis is accepted if the t-statistic exceeds 1.980 and the p-value is below 0.05 (Hair et al., 2014). A significant regression coefficient indicates a meaningful relationship between the tested variables, thereby supporting the proposed hypothesis.

The hypothesis testing results were obtained through data analysis using Partial Least Squares (PLS) with SmartPLS version 4.1.0.0. The output of this analysis is visualized in the path diagram shown in Figure 4.2, which illustrates the relationships among variables as evaluated through the PLS approach.



Source: Research data

Figure 2. Path Diagram

The table below presents the regression coefficient values for each independent variable in relation to the respective dependent variable being tested.

Table 4. Results of Direct Hypothesis Testing

Hypothesis	Path	Original sample (O)	T statistics	P values	Result
H1	The Influence of Occupational Health and Safety on Employee Performance	0.532	0.243	2.19	0.029
H2	The Influence of Work Environment on Employee Performance	0.512	0.184	2.781	0.005
H3	The Influence of Occupational Health and Safety on Job Satisfaction	0.635	0.098	6.482	0.000
H4	The Influence of Work Environment on Job Satisfaction	0.278	0.102	2.711	0.007
H5	The Influence of Job Satisfaction on Employee Performance	0.526	0.226	2.328	0.020

Source: Research data

Hypothesis 1

The path coefficient for this relationship is 0.532, indicating a moderate and positive effect. With a T-statistic of 2.19 and a P-value of 0.029 (< 0.05), the result is statistically significant. This finding suggests that improvements in occupational health and safety conditions contribute positively to enhancing employee performance. Therefore, H1 is supported. This result indicates that Occupational Health and Safety (K3) has a positive and statistically significant influence on employee performance. A safer and healthier work environment motivates employees to work more efficiently and minimizes the risk of injury or absenteeism, which ultimately enhances their performance. These findings reinforce the importance of investing in K3 programs as a strategic component of organizational productivity.

Hypothesis 2

The path coefficient is 0.512, which also reflects a moderate and positive effect. The T-statistic of 2.781 and P-value of 0.005 indicate that the effect is statistically significant. This result confirms that a better work environment plays a significant role in improving the performance of employees. Thus, H2 is supported. The positive and significant relationship between the work environment and employee performance indicates that the physical and psychological conditions of the workplace directly affect how employees carry out their duties. Elements such as cleanliness, air circulation, lighting, spatial layout, and interpersonal comfort can increase concentration, reduce stress, and improve output quality. Thus, creating a conducive work environment is essential for sustaining high performance.

Hypothesis 3

This hypothesis demonstrates a strong positive effect with a path coefficient of 0.635. The T-statistic is 6.482, and the P-value is 0.000, indicating a highly significant relationship. The findings imply that the presence of a safe and healthy working environment greatly enhances employee job satisfaction. Therefore, H3 is strongly supported. This hypothesis shows the strongest effect among all tested relationships. The significant influence of Occupational Health and Safety on job satisfaction reflects that employees who feel safe and healthy in the workplace are more likely to develop a sense of trust, comfort, and emotional well-being. These conditions enhance morale and increase overall satisfaction with their jobs. This implies that K3 implementation is not only about compliance but also about supporting employee welfare.

Hypothesis 4

The path coefficient is 0.278, suggesting a positive but relatively weaker effect compared to other relationships. However, with a T-statistic of 2.711 and a P-value of 0.007, the relationship is statistically significant. This suggests that although the influence is moderate, the quality of the work environment still contributes meaningfully to job satisfaction. Hence, H4 is supported. Although the path coefficient is relatively lower compared to other relationships, the work environment still significantly affects job satisfaction. A pleasant and supportive work atmosphere—both in terms of facilities and social interaction—can influence how employees perceive their jobs. When employees feel comfortable and supported in their work setting, their satisfaction levels increase, even if the impact is not as strong as other factors like K3.

Hypothesis 5

This hypothesis reveals a path coefficient of 0.526, indicating a moderate to strong positive effect. The T-statistic value of 2.328 and the P-value of 0.020 confirm the significance of the relationship. These results suggest that employees who experience higher job satisfaction tend to exhibit better performance. Therefore, H5 is supported. Job satisfaction significantly influences employee performance, as employees who are satisfied with their jobs tend to be

more motivated, committed, and productive. Satisfied employees are also more likely to show positive work behavior, such as initiative and responsibility. This finding confirms the role of satisfaction as a mediating factor that links workplace conditions with tangible performance outcomes. All five hypotheses are accepted, confirming the significant roles of both Occupational Health and Safety and the Work Environment in influencing Job Satisfaction and Employee Performance. Moreover, Job Satisfaction is proven to be a critical mediating variable that links workplace conditions to improved employee outcomes. These results provide empirical support for the development of workplace policies that prioritize safety, well-being, and conducive environments to achieve optimal organizational performance.

Table 5. Results of Indirect Hypothesis Testing

Hypothesis	Path	Original sample (O)	T statistics	P values	Result
H6	Occupational Health and Safety through Job Satisfaction has an effect on Employee Performance	0.334	2.401	0.016	Accepted
H7	Work Environment through Job Satisfaction has an effect on Employee Performance	0.146	1.486	0.137	Rejected

Source: Research data

Hypothesis 6

Based on the hypothesis testing results for H6, the path coefficient was found to be 0.334, with a T-statistic of 2.401 and a P-value of 0.016. Since the T-statistic exceeds the critical value of 1.96 and the P-value is less than 0.05, this hypothesis is accepted. This indicates that there is a significant indirect effect of Occupational Health and Safety on Employee Performance through Job Satisfaction. The result suggests that effective implementation of occupational health and safety programs not only contributes directly to performance improvement but also exerts an indirect influence by enhancing job satisfaction. When employees feel safe, healthy, and protected in the workplace, their level of job satisfaction increases, which in turn positively impacts their performance. Thus, Job Satisfaction serves as a significant mediating variable in the relationship between Occupational Health and Safety and Employee Performance.

Hypothesis 7

In hypothesis H7, the path coefficient was 0.146, with a T-statistic of 1.486 and a P-value of 0.137. Since the T-statistic is below the 1.96 threshold and the P-value exceeds 0.05, this hypothesis is rejected. In other words, there is no significant indirect effect of the Work Environment on Employee Performance through Job Satisfaction. Although the Work Environment was previously shown to have a direct effect on Employee Performance (as confirmed in hypothesis H2), the indirect influence via Job Satisfaction is not statistically strong enough to be considered significant. This result may indicate that employees' perceptions of the work environment have a more immediate and direct impact on performance, without necessarily passing through a substantial change in job satisfaction. Therefore, Job Satisfaction does not significantly mediate the relationship between Work Environment and Employee Performance in the context of this study.

CONCLUSION

The findings of this study reveal that Occupational Health and Safety (OHS) plays a significant role in improving employee performance, both directly and indirectly through job

satisfaction. A well-implemented OHS program not only provides a safe and secure working environment but also enhances employee morale, which contributes to better performance outcomes. Additionally, job satisfaction is proven to have a direct and significant effect on performance, serving as a mediating variable that strengthens the relationship between OHS and performance. This suggests that efforts to improve safety at work must be aligned with strategies to foster employee satisfaction to achieve optimal productivity.

Furthermore, the work environment is found to have a direct and positive influence on both job satisfaction and employee performance. However, its indirect influence through job satisfaction is not statistically significant, indicating that in technical operational settings such as UP PKB Cilincing, performance is more strongly influenced by tangible aspects of the work environment rather than emotional satisfaction alone. These results emphasize the importance of integrating both physical and psychological workplace factors to support sustainable employee performance. Future studies may explore additional mediating or moderating variables to enrich the understanding of these workplace dynamics.

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